=> d l16 1-2 ibib abs hitstr hitind

L16 ANSWER 1 OF 2 HCA COPYRIGHT 2002 ACS
ACCESSION NUMBER: 129:279763 HCA
TITLE: High-temperature bonding of alumina-based CMCs (Ceramic-Matrix Composites) to metals
AUTHOR(S): Heikinheimo, L.; Siren, M.; Gasik, M.; Kleer, G.
CORPORATE SOURCE: Espoo, Finland
SOURCE: DVS-Berichte (1998), 192(Hart- und Hochtemperaturloeten und Diffusionsschweissen), 301-304
CODEN: DVSBA3; ISSN: 0418-9639
PUBLISHER: Verlag fuer Schweissen und Verwandte Verfahren DVS-Verlag
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Diffusion bonding of CMCs for high-temp. uses was investigated. Development of the bonding process required theor. modeling of the behavior of SiC particle-reinforced Al2O3 ceramic under bonding conditions. Alternatively bonding with a Ti foil or a metallic coating and bonding in which the CMC surface were homogenized with an Al2O3 coating before bonding was investigated. The bonds were tested by 4-point bending strength both at room temp. and at elevated temp.

IT **189289-60-9**
(bonding interlayer; in high-temp. bonding of silicon carbide particle-reinforced alumina ceramics to metals)
RN 189289-60-9 HCA
CN Tantalum alloy, base, Ta 58,Ti 42 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ta	58	7440-25-7
Ti	42	7440-32-6

CC 57-2 (Ceramics)
Section cross-reference(s): 56
ST bonding particle reinforced alumina ceramic; silicon nitride particle alumina ceramic; interlayer alumina metal bonding; titanium foil bonding interlayer; tantalum coating bonding interlayer; **phys vapor deposition** coating metal; plasma spraying alumina coating; Nimonic PK33 nickel alloy coating
IT **Vapor deposition** process
(**phys**., of bonding interlayer; in high-temp. bonding of silicon carbide particle-reinforced alumina ceramics to metals)
IT 7440-25-7, Tantalum, uses 7440-47-3, Chromium, uses **189289-60-9**
(bonding interlayer; in high-temp. bonding of silicon carbide particle-reinforced alumina ceramics to metals)

L16 ANSWER 2 OF 2 HCA COPYRIGHT 2002 ACS

ACCESSION NUMBER: 120:83826 HCA
TITLE: Joining of titanium or zirconium alloy pipe to stainless steel pipe
INVENTOR(S): Takeda, Seiichiro; Yamaguchi, Hidetoshi; Inoe, Takao; Mizoguchi, Takatoo; Nakamura, Shigeki
PATENT ASSIGNEE(S): Doryokuro Kakunenryo, Japan; Kobe Steel Ltd
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05277759	A2	19931026	JP 1992-98747	19920324

AB A pipe of Ti, Ti alloy, Zr, or Zr alloy is joined to a stainless steel pipe by **phys. vapor depositing** of Ta 0.5-50 .mu.m thick on 1 bonding surface, or **phys. vapor depositing** of Ta on both bonding surfaces at a thickness .gtoreq.5 .mu.m on 1 bonding surface but .ltoreq.50 .mu.m on both surfaces, and hot isostatic pressing for diffusion bonding. The obtained joints show high strength and high corrosion resistance.

IT **100438-63-9**
(pipe, joining of, to stainless steel pipe, by diffusion bonding through vapor-deposited tantalum)

RN 100438-63-9 HCA
CN Titanium alloy, base, Ti,O,Ta (Ti5Ta) (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	95	7440-32-6
Ta	5.1	7440-25-7
O	0.1	17778-80-2

IC ICM B23K020-00
ICI B23K101-06, B23K103-24
CC 56-9 (Nonferrous Metals and Alloys)
IT **Vapor deposition** processes
(**phys.**, of tantalum, on joining surface of titanium or zirconium or tainless steel pipes, for diffusion bonding)
IT 12611-86-8, SUS304L **100438-63-9**
(pipe, joining of, to stainless steel pipe, by diffusion bonding through vapor-deposited tantalum)

=> d l18 1-6 ti

L18 ANSWER 1 OF 6 HCA COPYRIGHT 2002 ACS
TI Sputtering **target** from titanium alloys for forming copper

diffusion barriers

L18 ANSWER 2 OF 6 HCA COPYRIGHT 2002 ACS
TI Method for forming a TiO2-x film on a material surface by using plasma immersion ion implantation and the use thereof

L18 ANSWER 3 OF 6 HCA COPYRIGHT 2002 ACS
TI Manufacture of titanium-tantalum alloys by plasma-torch melting of metal powder mixtures followed by ingot casting and hot rolling

L18 ANSWER 4 OF 6 HCA COPYRIGHT 2002 ACS
TI Process for multistep coating of substrates.

L18 ANSWER 5 OF 6 HCA COPYRIGHT 2002 ACS
TI Titanium-added high-purity tantalum sintered sputtering **targets**

L18 ANSWER 6 OF 6 HCA COPYRIGHT 2002 ACS
TI Composition and structure of co-sputtered tantalum-titanium alloy thin films

=> d l18 1,4,5,6 cbib abs hitstr hitind

L18 ANSWER 1 OF 6 HCA COPYRIGHT 2002 ACS
136:192901 Sputtering **target** from titanium alloys for forming copper diffusion barriers. Li, Jianxing; Turner, Stephen; Yao, Lijun (Honeywell International Inc., USA). PCT Int. Appl. WO 2002014576 A1 20020221, 55 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US17996 20010531. PRIORITY: US 2000-PV225518 20000815.

AB The invention describes herein relates to new Ti-comprising materials which can be used for forming Ti alloy sputtering **targets**. The Ti alloy sputtering **targets** can be reactively sputtered in a N-comprising sputtering atm. to form an alloy TiN film, or alternatively in a N-comprising and O-comprising sputtering atm. to form an alloy TiON thin film. The thin films formed in accordance with the present invention can have a noncolumnar grain structure, low elec. resistivity, high chem. stability, and barrier layer properties comparable to those of TaN for thin film Cu barrier applications. Further, the Ti alloy sputtering **target** materials produced in accordance with the present invention are more cost-effective for semiconductor applications than are high-purity Ta materials and have superior mech. strength suitable for high-power sputtering applications.

PCT/US01/17996

IT **400019-91-2P**, Tantalum 0.65, titanium 99.35 (atomic)
(sputtering **target** from titanium alloys for forming copper diffusion barriers)
RN 400019-91-2 HCA
CN Titanium alloy, base, Ti 98,Ta 2.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	98	7440-32-6
Ta	2.4	7440-25-7

IC ICM C23C014-34
CC 76-12 (Electric Phenomena)
Section cross-reference(s): 56
ST titanium alloy nitride reactive sputtering **target** diffusion barrier copper
IT Annealing
Diffusion barrier
Reactive sputtering
Sputtering **targets**
(sputtering **target** from titanium alloys for forming copper diffusion barriers)
IT Borophosphosilicate glasses
(sputtering **target** from titanium alloys for forming copper diffusion barriers)
IT Transition metal nitrides
(titanium; sputtering **target** from titanium alloys for forming copper diffusion barriers)
IT Titanium alloy, base
(sputtering **target** from titanium alloys for forming copper diffusion barriers)
IT 7727-37-9, Nitrogen, processes
(sputtering **target** from titanium alloys for forming copper diffusion barriers)
IT 65834-47-1P, Aluminum 1, titanium 99 (atomic) 108000-69-7P, Titanium 99, yttrium 1 (atomic) 400019-90-1P, Titanium 95, yttrium 5 (atomic)
(sputtering **target** from titanium alloys for forming copper diffusion barriers)
IT **400019-91-2P**, Tantalum 0.65, titanium 99.35 (atomic)
(sputtering **target** from titanium alloys for forming copper diffusion barriers)
IT 7440-50-8, Copper, uses
(sputtering **target** from titanium alloys for forming copper diffusion barriers)
IT 7429-90-5, Aluminum, uses 7429-91-6, Dysprosium, uses 7439-89-6, Iron, uses 7439-91-0, Lanthanum, uses 7439-96-5, Manganese, uses 7440-00-8, Neodymium, uses 7440-02-0, Nickel, uses 7440-10-0, Praseodymium, uses 7440-19-9, Samarium, uses 7440-20-2, Scandium, uses 7440-24-6, Strontium, uses 7440-25-7, Tantalum, uses 7440-39-3, Barium, uses 7440-41-7, Beryllium, uses

7440-42-8, Boron, uses 7440-44-0, Carbon, uses 7440-45-1, Cerium, uses 7440-46-2, Cesium, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-52-0, Erbium, uses 7440-54-2, Gadolinium, uses 7440-58-6, Hafnium, uses 7440-60-0, Holmium, uses 7440-62-2, Vanadium, uses 7440-64-4, Ytterbium, uses 7440-65-5, Yttrium, uses 7440-67-7, Zirconium, uses 7440-70-2, Calcium, uses 7704-34-9, Sulfur, uses 7723-14-0, Phosphorus, uses
(sputtering **target** from titanium alloys for forming copper diffusion barriers)

IT 7440-21-3, Silicon, properties
(sputtering **target** from titanium alloys for forming copper diffusion barriers)

IT 7440-37-1, Argon, processes
(sputtering **target** from titanium alloys for forming copper diffusion barriers)

IT 107434-45-7, Titanium 95, zirconium 5 (atomic)
(sputtering **target** from titanium alloys for forming copper diffusion barriers)

IT 65834-63-1P, Titanium 99, zirconium 1 (atomic)
(sputtering **target** from titanium alloys for forming copper diffusion barriers)

IT 400019-92-3, Titanium 88-100, zirconium 0-12 (atomic) 400019-93-4, Titanium 92-100, zirconium 0-8 (atomic) 400019-94-5, Titanium 94-100, zirconium 0-6 (atomic) 400019-95-6, Titanium 98-100, zirconium 0-2 (atomic) 400019-96-7, Titanium 88-98, zirconium 2-12 (atomic)
(sputtering **target** from titanium alloys for forming copper diffusion barriers)

IT 7631-86-9, Silica, properties
(sputtering **target** from titanium alloys for forming copper diffusion barriers)

IT 400019-89-8P, Titanium zirconium nitride (Ti0.45Zr0.02N0.52)
(sputtering **target** from titanium alloys for forming copper diffusion barriers)

IT 25583-20-4P, Titanium nitride (TiN) 37271-26-4P, Titanium nitride oxide 61027-49-4P, Tantalum titanium nitride 113151-72-7P, Aluminum titanium nitride 136938-94-8P, Titanium yttrium nitride
(sputtering **target** from titanium alloys for forming copper diffusion barriers)

IT 116305-88-5, Silicon fluoride oxide
(sputtering **target** from titanium alloys for forming copper diffusion barriers)

L18 ANSWER 4 OF 6 HCA COPYRIGHT 2002 ACS

121:115363 Process for multistep coating of substrates.. Muenz, Wolf Dieter (Hauzer Techno Coating Europe BV, Neth.). Eur. Pat. Appl. EP 603486 A2 19940629, 3 pp. DESIGNATED STATES: R: AT, BE, CH, DE, ES, FR, GB, IE, IT, LI, LU, NL. (German). CODEN: EPXXDW. APPLICATION: EP 1993-116882 19931019. PRIORITY: DE 1992-4243915 19921223.

AB To increase homogeneity of 2-phase coatings produced by cathodic

sputtering and improve adhesion, substrates are pretreated in a metal vapor of an arc discharge plasma by using the higher melting component of the 2-phase **target**. In the case of Ti-Al, Zr-Al, and Cr-Al alloy coatings, precoating is done by (1) Ti, Zr, and Cr, (2) their alloys with Ta, Nb, or W, (3) W, or (4) WC. In the case of Ti-Al nitride, Zr-Al nitride, and Cr-Al nitride coatings, precoating is done with W.

IT **157010-00-9**
(precoating with, prior to sputtering with titanium-aluminum alloy)

RN 157010-00-9 HCA
CN Titanium alloy, base, Ti 21-93,Ta 7.2-79 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	21 - 93	7440-32-6
Ta	7.2 - 79	7440-25-7

IC ICM C23C014-02
ICS C23C014-06; C23C014-14; C23C014-32; C23C014-34
CC 56-6 (Nonferrous Metals and Alloys)
IT **157010-00-9** 157010-01-0 157010-02-1
(precoating with, prior to sputtering with titanium-aluminum alloy)

L18 ANSWER 5 OF 6 HCA COPYRIGHT 2002 ACS
113:88790 Titanium-added high-purity tantalum sintered sputtering **targets**. Sawada, Susumu; Wada, Hironori; Ashida, Koji (Nippon Mining Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01290766 A2 19891122 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-119079 19880518.

AB The **target** is made from Ta 99.999-99.9999% in purity to which 0.1-2 at.% Ti is added, and produced by mixing of powders of TaH2 and TiH2 which are prepd. by hydrogenation of electron beam-fused metals, dehydrogenation, and sintering of the powder mixt., and annealing of the sinter. The **target** produces a Ta2O5 film in which O-defects are compensated by Ti.

IT **50954-26-2**
(sintered sputtering **targets** from)

RN 50954-26-2 HCA
CN Tantalum alloy, base, Ta,Ti (9CI) (CA INDEX NAME)

Component	Component Registry Number
Ta	7440-25-7
Ti	7440-32-6

IC ICM C23C014-34
ICS B22F009-04; B22F009-30; C22C001-04
CC 75-2 (Crystallography and Liquid Crystals)

Section cross-reference(s): 56
ST titanium added tantalum sintered sputtering **target**
IT Sputtering
(app., **targets**, sintered, from titanium-added high-purity tantalum)
IT **50954-26-2**
(sintered sputtering **targets** from)
IT 1314-61-0, Tantalum oxide (Ta2O5)
(sputter deposition of, titanium-added high-purity tantalum **targets** for)

L18 ANSWER 6 OF 6 HCA COPYRIGHT 2002 ACS
76:77558 Composition and structure of co-sputtered tantalum-titanium alloy thin films. Oohashi, Takashi; Yamanaka, Shunichi (Tokyo Inst. Technol., Tokyo, Japan). Jap. J. Appl. Phys., 11(1), 108-9 (English) 1972. CODEN: JJAPA5.
AB Ta-Ti alloy films 3000-4000 .ANG. thick were deposited by co-sputtering from Ta cathode **targets** partly covered by Ti plates 1 mm thick onto Corning glass 7059 at 50-150.degree. in Ar at 0.02-0.06 torr. The effects of deposition rate, 5-85 .ANG./mm, and of compn., 0-100 at. % Ta, were detd. Up to .apprx.30 at. % Ta, the structure was hexagonal, with preferred orientation to the (001) plane. At higher deposition rates, the cubic structure occurred at higher Ta contents. The cubic structure occurred at 30 .+-. 5 at. % Ta; it may be an impurity-stabilized phase. An amorphous structure occurred at 40-100 at. % Ta, at deposition rate .apprx.10 .ANG./min; it is probably an O or N-stabilized structure. Ta is a .beta.-phase (cubic) stabilizer.
IT **12611-11-9**
(sputtering of, film compn. and structure in)
RN 12611-11-9 HCA
CN Tantalum alloy, base, Ta 0-100,Ti 0-100 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ta	0 - 100	7440-25-7
Ti	0 - 100	7440-32-6

CC 70 (Crystallization and Crystal Structure)
IT **12611-11-9**
(sputtering of, film compn. and structure in)